CSC 456/656 Fall 2022 Topics for Third Examination

1. Study the true/false questions we went over in class, and their answers, but skip questsions (vi), (xiii), (lviii), (lxxxv), (lxxxvi), (lxxxvii).

2. Understand the meaning of *recursive* real number. Is it possible to define any specific non-recursive real number?

3. What is a one-way function? Does there exist any one-way function?

4. Both parts of each of the two theorems I proved in class on Monday, November 21.

5. What is the Church Turing thesis? Why do we care?

6. Countable, uncountable.

   Let $\mathbb{R}$ be the set of real numbers. Is there any set that has more elements than $\mathbb{R}$?

7. Understand Nick's Class. Is the language $\{a^n b^n c^n : n \geq 0\}$ $\mathcal{NC}$?

8. Prove that the halting problem is undeciable.

9. Let M be the minimal DFA which accepts a language L. Prove that L is infinite if and only if the state diagram of M contains a cycle which does not contain a dead state.

10. Know what a guide string is.

11. Understand the function $F(n)$ defined in True/False question (lxxv).